



# Holistic Personal public Eco-mobility



## D5.3.2

### Pilot Realization Report – Coventry City Council. Second Version

<b>Project Acronym</b>	HoPE	
<b>Project Title</b>	Holistic Personal public Eco-mobility	
<b>Project Number</b>	621133	
<b>Work Package</b>	WP5 Pilot Execution, Monitoring and Evaluation	
<b>Lead Beneficiary</b>	OASA	
<b>Editors</b>	Sunil Budhdeo	CCC
<b>Reviewer</b>	Sven Maerivoet	TML
<b>Reviewer</b>		
<b>Dissemination Level</b>	PU	
<b>Contractual Delivery Date</b>	30/09/2016 (M28)	
<b>Actual Delivery Date</b>	14/06/2017 (M37)	
<b>Version</b>	V0.8 (pending EC approval)	

## **Purpose of the Deliverable**

The current deliverable D5.2.2 “Pilot Realization Report – Coventry TfWM Second Version” aims to report the activities carried out to evaluate the HoPE Mobile applications developed for Coventry City Council & TfWM, along with the evaluation results of the 2nd evaluation cycle. The document is divided in 3 parts. The first one describes the pilot activities undertaken during the overall evaluation process, including the internal testing of the HoPE Mobile applications, the focus group execution and finally the dissemination to real users. The second part of the document presents and discusses the evaluation results extracted by the mentioned evaluation tools, whereas the third and last part of the document concludes the work done with a summary of the results.

## Document History

Version	Date	Comments
0.1	15/04/2017	ToC definition
0.2	02/05/2017	Revised ToC definition
0.3	04/05/2017	Second Revised ToC definition
0.4	17/05/2017	Input by CTI added
0.5	22/05/2017	Input by CTI revised
0.6	25/05/2017	Input by CTI added and revised
0.7	31/05/2017	Input by CCC added and revised
0.8	14/06/2016	Final proofread

## Deliverable manager

CCC – Sunil Budhdeo

## List of Contributors

Katerina Antaraki	OASA
Vlasios Kasapakis	CTI
Damianos Gavalas	CTI
Christos Zaroliagis	CTI
Grammati Pantziou	CTI
Kalliopi Giannakopoulou	CTI
Spyros Kontogiannis	CTI
Sven Maerivoet	TML
Griet De Ceuster	TML
Filip Vanhove	TML
Gitte Van Den Bergh	TML
Leen Verbist	TML
Veerle Vranckx	TML

## List of Evaluators

Sven Maerivoet (TML)

### Nature:

Report

### Dissemination Level:

Public

## Table of Contents

About HoPE .....	5
Glossary .....	6
1. Introduction.....	7
1.1. Purpose of this document .....	7
1.2. Approach. How this deliverable will be addressed .....	7
1.3. Audience.....	7
2. Pilot activities.....	8
2.1. Internal testing.....	8
2.2. Focus Groups .....	8
2.3. Dissemination actions .....	8
2.4. Pilot execution plan.....	10
3. Pilot results.....	11
3.1. Internal testing results .....	11
3.2. Focus groups results.....	11
3.3. User evaluation results .....	11
3.3.1. TfWM Trip Planner.....	12
3.3.1.1. TestFairy platform .....	12
3.3.1.2. Google Play Statistics .....	14
3.3.1.3. Logging module results .....	16
4. Discussion .....	17
5. Conclusion .....	18

## About HoPE

*“A platform for secure payments and smart multimodal trip planning”*

The main purpose of the HoPE project is to advance the role of public transportation systems through an open platform. This allows combining interoperable fare management with Intelligent Transport Systems (ITS). The overall platform is user-oriented, making them aware about public transport and eco-mobility. It provides users with a significant mix of services including info-mobility, trip planning, ticket reservation, fare calculation and mobile payments. As such, HoPE is a holistic system, focusing the attention on the 'bigger picture' and how all its parts are interconnected.

The HoPE platform implements secure and accessible payment procedures for fares, and provides travellers with smart trip planning. This adoption of smart trip planning has provided us with the opportunity to get intelligent advanced traveller metrics, which will be demonstrated during this report. These enhancements include key metrics associated with trips, e.g. fares, durations and emissions.

The HoPE platform was piloted and tested in three European cities (Coventry, West Midlands, UK; Athens, Greece; and Basque Country, Greece). The platform was applied to a wide set of local and regional transportation modes included buses, underground subway systems, over ground railway lines, car-sharing services, bike sharing services, on demand transport and others forms that were available.

HoPE demonstrated the benefits of seamless interoperable fare management can be deployed across regions through cooperation between different transport operators across the whole of the West Midlands, which covers the seven metropolitan boroughs.

## Glossary

HoPE	Holistic Personal Public Eco-mobility
DAU	Daily Active Users
MAU	Monthly Active Users
DMR	Daily Active Users / Monthly Active Users Ratio
APK	Android Package Kit
POI	Point of Interest

# 1. Introduction

## 1.1. Purpose of this document

This deliverable document serves to report on the history of the HoPE project evaluating pilot potential and actualised outcomes, with specific respect being paid to the framework laid out in Task 5.1 and Task 5.4, according to the Description of Work. Task 5.1 aims to coordinate the three pilot realisations, making the necessary technical preparation activities regarding infrastructure and other necessary equipment. It also provides the necessary training to the personnel of the public transport operators that will make use of the HoPE services. Task 5.4 belongs to Coventry City Council's Pilot Execution and it is focused in deploying, running and testing by the task participant, with the co-ordination and co-operation of Task 4.4 (for the deployment and technical assistance) and Task 5.1 (for the preparation and co-ordination of the activities) with the HoPE platform. According to the pilot plan, defined within Task 2.4, the tests are to be conducted in Coventry in partnership with Transport for West Midlands, the Public Transport authority in the West Midlands region of the UK. In the trials we have utilised a subset of the public transportation network and have exploited traffic and transport data provided by Coventry City Council's Traffic Control Centre, Transport Department and Infohub.

Information gathered from the MODUM application may be included as the MODUM application was exploited and integrated into HoPE services and applications. The strategy presented for the HoPE project identified the pilot area across the West Midlands with the emphasis on Coventry. The goal was to pilot a unified ticketing system (NFC, Contactless) that would be adopted across the region if pilot results proved positive enough to justify this advancement.

This document discusses the evaluation actions undertaken in the framework of Task 5.4 according to the pilot realisation plan defined in the framework of Task 5.1, discussing the final evaluation results.

## 1.2. Approach. How this deliverable will be addressed

This document is prepared for those transport operators, who are participating in the HoPE pilots and aims to provide them with an overview of the executed activities of the pilot realization and inform them on the obtained so far evaluation results on the HoPE Mobile applications, developed for Coventry City Council and the TfWM as the public transport operators within the West Midlands, during the 2nd evaluation cycle. Finally, the technical partners can utilize this document to understand possible improvements on the HoPE Mobile applications developed for TfWM and how it can be integrated with its Swift card application.

## 1.3. Audience

The intended audience of this document is:

- i. All existing stakeholders of the HoPE project
- ii. Transport operators who will use this document to evaluate the success of the project and ascertain potential exploitation benefits for the West Midlands
- iii. Technology providers who need to understand actions taken so far and provide context for any future development activities.
- iv. App Download Link

The most up to date version of the HoPE App (WM) is available at the following link: <https://play.google.com/store/apps/details?id=com.itaca.it.hope.coventry>

## 2. Pilot activities

The pilot operations that take place during the evaluation of the HoPE mobile applications are separated in three (3) iterative cycles (with incremental technical functionalities). Detailed information on the planned evaluation actions which take place during the evaluation cycles are presented in D5.1.1. The previous version of this document (D5.3.1) presented in detail the evaluation actions and results for the area of Coventry during the 1st evaluation cycle. This document shows the progress done during the 2nd evaluation cycle which started on May 1st 2016 and ended on February 28th 2017.

In detail, this document presents the evaluation results towards the TfWM Trip Planner application. Detailed descriptions of the TfWM application exist in D3.1.1 (and its next versions).

### 2.1. Internal testing

Prior to the dissemination of the HoPE mobile applications to the public, a detailed internal testing phase took place where the consortium members tested the applications, revealing several issues later addressed by the technical partners. The TfWM Trip Planner application went through the above internal testing phase during the 1<sup>st</sup> evaluation cycle with its results presented in detail in the previous version of this deliverable (D5.3.1).

### 2.2. Focus Groups

After being internally tested, The TfWM Trip Planner application was disseminated to a focus group which also tested the application and provided useful insights. The focus group took place during the 1<sup>st</sup> evaluation cycle with its results presented in detail in the previous version of this deliverable (D5.3.1).

### 2.3. Dissemination actions

Coventry City Council engaged multiple partners to work with on dissemination of the HoPE platform. We were initially challenged by staff handovers and a reduction in available personnel resources however we were still able to make some progress. The initial efforts for dissemination of the application were focussed internally. We requested that information about the app be released in the daily newsletter, sent out to all members of Coventry City Council and the wider West Midlands community. We provided the communications team with a brief and logos to enable them to distribute it on all channels available to them. We attended seminars and conferences promoting HoPE. At the same time, we utilised our personal networks, reaching out through social media and requesting assistance from organisations we'd previously had good professional relations with. This widened the potential user pool as it included people who did not work in transport and infrastructure, and extended to other professions and industries such as charities, marketing, and consulting. Connecting with charities enabled us to gain exposure with a greater diversity of potential users. One charity that agreed to disseminate the application worked exclusively with young people, the majority of whom were public transport users and likely to benefit from opportunities to create a modal shift. There was potential for exciting feedback from this user group, given that one of the charity's cohort focussed entirely on environmental issues. We raised great awareness of HoPE as many people had exposure to it, however this did not convert to download's we would have liked. Potential users noted the difficulty of finding the application in the android store and several intuitive keyword searches did not bring up the application. The West Midlands has a saturated market for travel planning apps and bigger brands, so we expect a large number of users to have dropped off at this point.



We then reached out to our colleagues at partner organisations and delivered requests to institutions like research departments at local universities, private sector colleagues, and other public transport bodies. We suspect some may have downloaded the application once, and reviewed it as a group activity limiting the measurable we needed for quantitative data. We were able to gain their consent to distribute and they encouraged their colleagues and reports to download the applications. Transport for West Midlands engaged heavily in testing and completing surveys providing very good feedback for our development.

We revisited internal support, following informal requests across departments we escalated to the internal body that manages the major teams within the transport and infrastructure department and requested further downloads. These requests were repeated and we noted that internal awareness of our development work could be higher. Colleagues were not always aware that we wanted feedback both good and bad, as the purpose of development projects is to create new technologies. Anecdotal evidence received supported this, people were less willing to provide feedback and use the application if their initial feedback wasn't as positive. Other informal feedback included that people were less willing to download an application if the ratings or comments on the android store were not high. The Play Store rating directly influenced people's decisions to download.

Towards the end of the second cycle we reached out and made direct contact with the presidents of local student unions and asked them to promote the application and encourage downloads amongst their students. Whilst the presidents were amenable to the dissemination proposals we had approached them towards the end of their second semesters. With upcoming holidays and exams, we were not expecting a high uptake however contacting local student unions was a new and successful endeavour for us and is something we will expand upon in the future – there are numerous higher and further education institutions within the West Midlands and going forward participant recruitment will have a higher focus for the work intelligent mobility does.

We learnt that our collective approach to participant recruitment wasn't as productive or effective as it needed to be, we were not retaining previously recruited participants for other research projects and were constantly having to sell new applications to get the buy-in that we need. The challenges that we faced in HoPE participant recruitment meant that we were not seeing the return on the investment of our time that we needed. The HoPE project served as evidence that an overhaul of our recruitment techniques was required and this is underway. We are working with behavioural psychology economists to master the most effective terminology, developing a co-ordinated communications strategy, researching effective incentivisation techniques, integrating with bigger public transport bodies in the West Midlands and aiming for a more effective recruitment strategy that will deliver the download and feedback we need.

## 2.4. Pilot execution plan

The Pilot Execution was divided into two stages to accompany the different versions of the application that were developed.

### **Stage 1:**

The first version of the HoPE route planning application was internally tested by consortium members and the focus group. This version was based on the Google API. The main objective was to test the user experience with the application on several measurable such as usability, interface, application response time. Using the API saved the consortium valuable time.

### **Stage 2:**

The second stage was heavily disrupted due to overhaul in the United Kingdom. National Government powers were devolved regionally and Coventry City Council became part of a newly formed West Midlands Combined Authority. Centro were previously the appointed public transport authority but as part of the combined authority changes were dissolved. The Swift application and its technologies for NFC payments were controlled by Centro and the APIs became unavailable at this point, disrupting the second stage project plans.

Originally the second was due to start was due to start once the integration with Swift, MODUM and the HoPE route planner service was complete, with the focus group were to be informed by email to download the application from a link provided by the developers. Unfortunately, due to the aforementioned changes an open API for the Swift card system was not available, and neither was a workable alternative.

The second stage went ahead but instead of purchases being available through the application, the user was directed to a mobile website and would have to re-enter their data. These changes which were outside of our control affected the proposed uptake.

### **Stage 3:**

Due to staff handovers a slightly different approach was taken during the third cycle. As mentioned in 2.3 Dissemination Actions, we focused on building network based recruitment to widen the pool of potential users and distributed the link to the application through channels at several large institutions and internally through partner organisations. We encouraged all those who downloaded to offer feedback via the application, and in communication informed those that there would be a competition to win a smartphone for those who downloaded the application and provided feedback. This was in addition to all previous dissemination actions.

## 3. Pilot results

### 3.1. Internal testing results

During the 2nd evaluation cycle no significant issues were revealed for the TfWM Trip Planner application, mostly because the application was already tested in detail in the 1st evaluation cycle. However, the TfWM Trip Planner application was internally tested to the 2nd cycle too, where a few minor bugs (e.g. translation issues and issues in the application connection to the route planning service) were revealed and addressed by the technical partners.

### 3.2. Focus groups results

As already mentioned the focus group for the TfWM Trip Planner application took place during the 1st evaluation cycle with its results presented in the previous version of this deliverable (D5.3.1).

### 3.3. User evaluation results

In this section, the statistics obtained from the TestFairy platform and Google Play used to distribute the TfWM Trip Planner are presented.

Also, we examine the Daily and Monthly Active Users (DAU and MAU) of the TfWM Trip Planner application. These DAU and MAU act as key performance indicators (KPIs). They are metrics that are used to measure the performance of games, products, or even a company as a whole. They permit us to keep track of our user base over time.

- **Daily Active Users (DAU)**  
= the number of unique app installations across all devices that were active on specific day. So, the DAU gives the number of unique users that start at least one session in an app on any given day. A high and steady DAU characterises a healthy app; it is a determinant of popularity, an illustration of potential.
- **Monthly Active Users (MAU)**  
= the number of unique app installations across all devices that were active over the last 30 days.
- **DAU/MAU Ratio (DMR)**  
The closer the DAU/MAU ratio is to 1, the higher an app's "stickiness" is (meaning that more of the users are returning to the app daily). For example, suppose the MAU is 100,000 and averages some 15,000 DAU. Then, the DAU/MAU ratio would be 15%. This means that the average user logged in on roughly 15 percent of the days that month. Typical mobile apps are around 10% — 20%, typical Facebook apps score around 20% — 30%.

The dissemination of the HoPE mobile applications was carried out through two different channels during the 2<sup>nd</sup> cycle. At first and for most of the 2<sup>nd</sup> cycle duration, the HoPE mobile applications were disseminated via TestFairy<sup>1</sup>. However, the obligation of the users to download a separate Android Package Kit file<sup>2</sup> (.apk) and enable the Unknown Sources<sup>3</sup> option to install the applications when using TestFairy, had an impact to the overall usage of the applications. Therefore, efforts were put by the consortium members and all the HoPE mobile applications were moved to the Google Play<sup>4</sup>. Google Play is rather widespread among Android users and is a trusted source to

---

<sup>1</sup> <https://testfairy.com/>

<sup>2</sup> [https://en.wikipedia.org/wiki/Android\\_application\\_package](https://en.wikipedia.org/wiki/Android_application_package)

<sup>3</sup> <https://android.gadgethacks.com/how-to/android-basics-enable-unknown-sources-sideload-apps-0161947/>

<sup>4</sup> <https://play.google.com/store>

install applications, featuring easier application installation process. In the following sections evaluation results of the 2<sup>nd</sup> cycle from both TestFairy and Google Play platforms, towards the TfWM Trip Planner application are presented.

### 3.3.1. TfWM Trip Planner

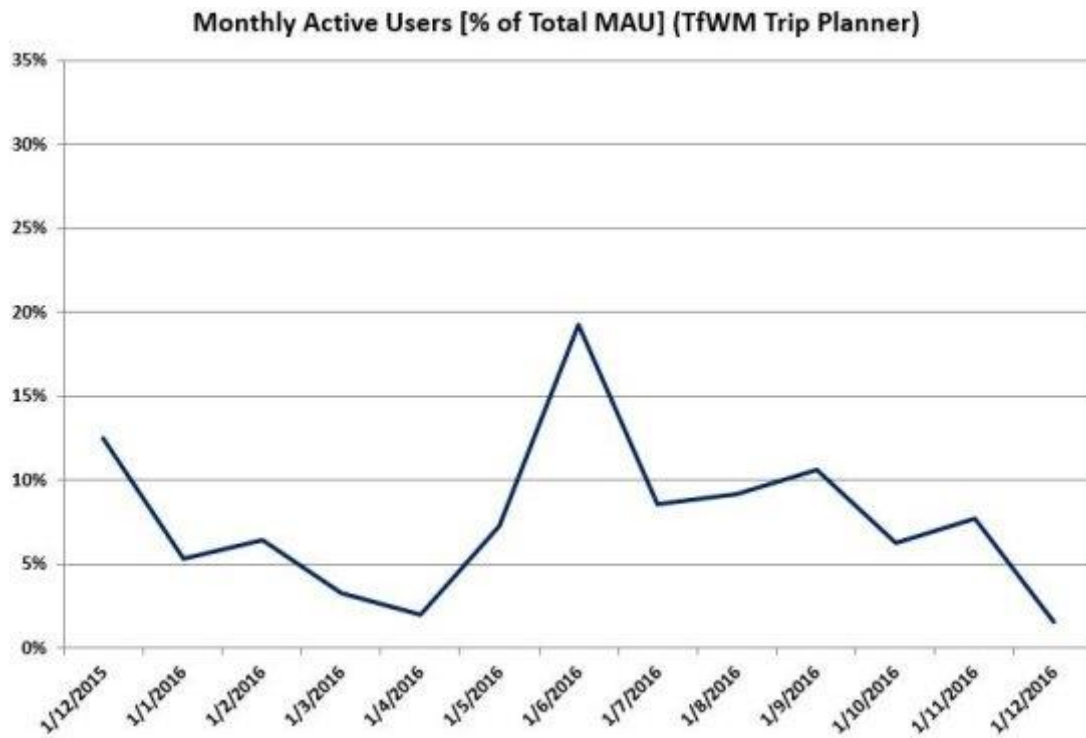
#### 3.3.1.1. TestFairy platform

During the 2nd evaluation cycle the TfWM Trip Planner application attracted ..... total users. Looking at Figure 1 we see that the DAU of the TfWM Trip Planner application started to increase from the start of the 2nd evaluation cycle, reaching a number of peaks until December 2016, when the application was planned to be transferred to Google Play and the dissemination actions focusing on that platform instead of TestFairy.



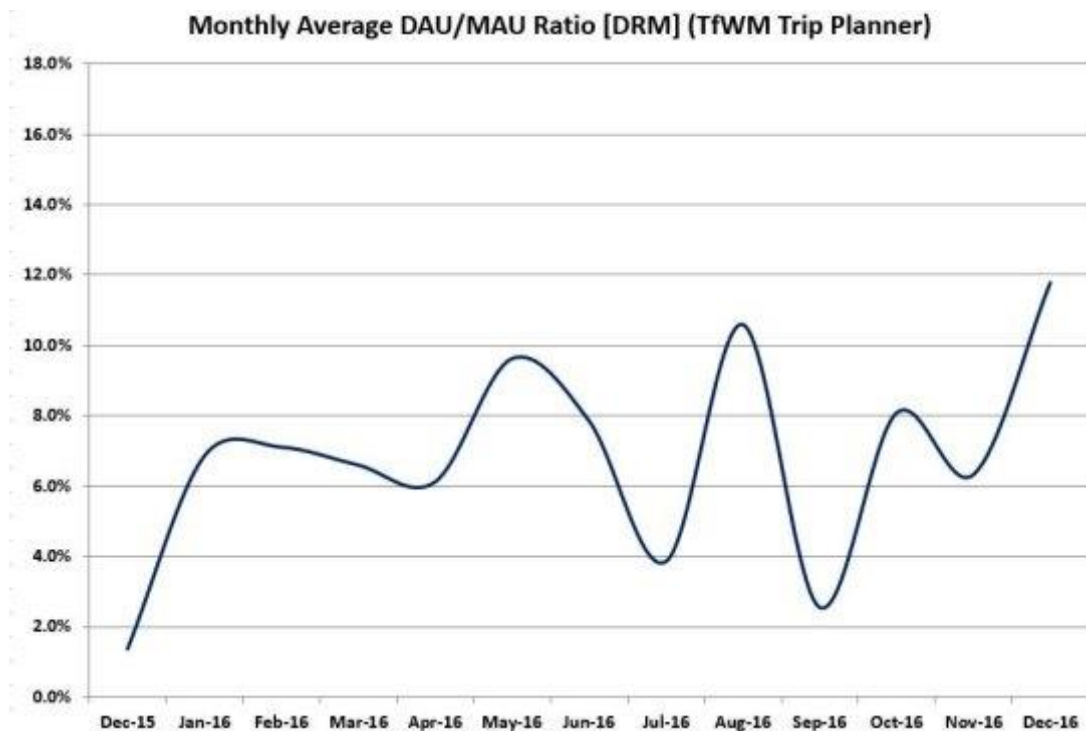
Figure 1: Evolution of Daily Active Users from TestFairy

The same trend as Figure 1 is followed in Figure 2, with the MAU reaching a number of peaks (6/2016, 9/2016 and 11/2016) during the 2<sup>nd</sup> evaluation cycle. The MAU also decreased in December 2016 when the TfWM Trip Planner application was transferred to Google Play.



**Figure 2: Monthly Active Users [% of Total Monty Active Users] from TestFairy**

Interestingly, as shown by Figure 3, the TfWM Trip Planner application proved to maintain a high number of users who kept the application on their Smartphone devices and used it in a regular basis during the 2<sup>nd</sup> evaluation cycle.



**Figure 3: Monthly Average DAU/MAU Ratio (DMR) from TestFairy**

### 3.3.1.2. Google Play Statistics

As already mentioned above, increased efforts by the consortium members resulted into moving the HoPE mobile applications from TestFairy to Google Play, easing their dissemination to the public. This platform shift took place at the end of December 2016. The results presented below are from the Google Play Statistics platform covering the period from December 2016 until the end of February 2017 where the 2<sup>nd</sup> evaluation cycle ended.

Figure 4 below reveals the total number of users who installed the TfWM Trip Planner application on their smartphone devices through Google Play. Despite being flat in February 2017, the number of total user installs starts to increase at the end of the 2<sup>nd</sup> cycle due to increased dissemination actions focusing on the application evaluation during the upcoming 3<sup>rd</sup> evaluation cycle.



**Figure 4: Total User Installs (The total number of unique users who have ever installed this app on one or more of their devices)**

Figure 5, reveals the number of active devices the TfWM Trip Planner application was installed on during the 2<sup>nd</sup> evaluation cycle. Crosschecking the statistics presented in Figure 4 and Figure 5 reveals that a high percentage of users (54%) kept the application installed in their devices for further use.



**Figure 5: Current installs (The number of devices that have been active in the previous 30 days and on which the application is currently installed)**

Figure 6 presents in more detail the abovementioned results, showing the trends among the users who downloaded the TfWM Trip Planner application and the one who kept it installed in their smartphone devices.

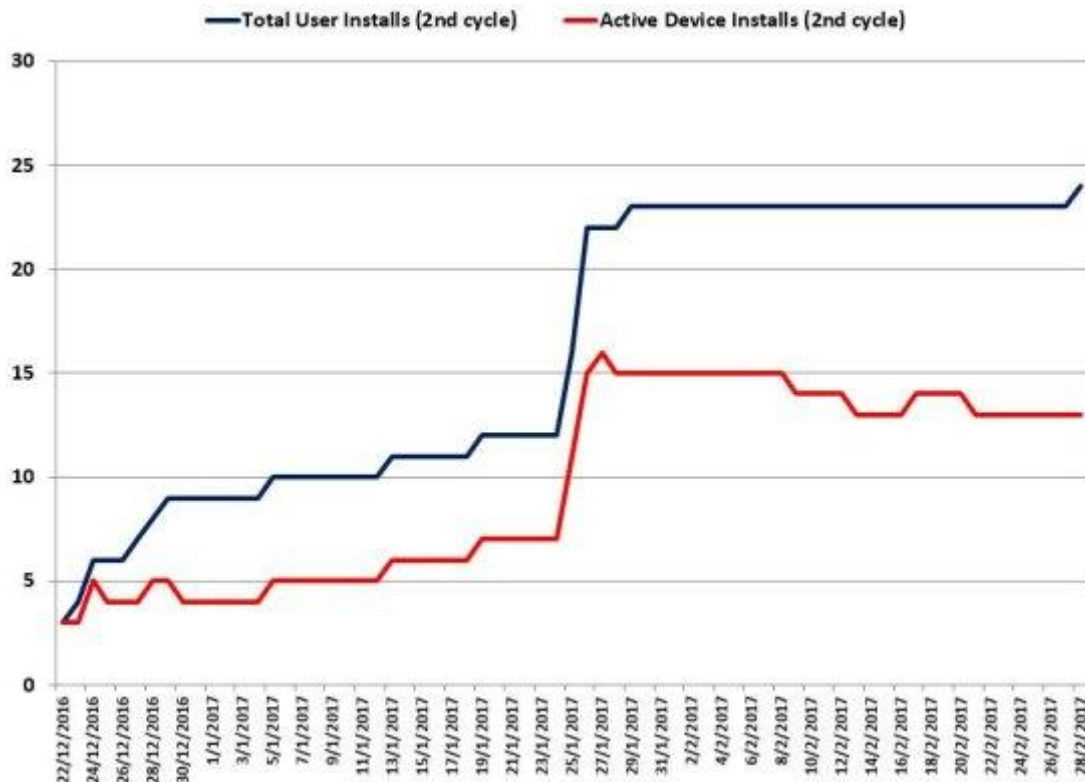


Figure 6: Evolution of Total User Install and Current Installs from Google Play Statistics.

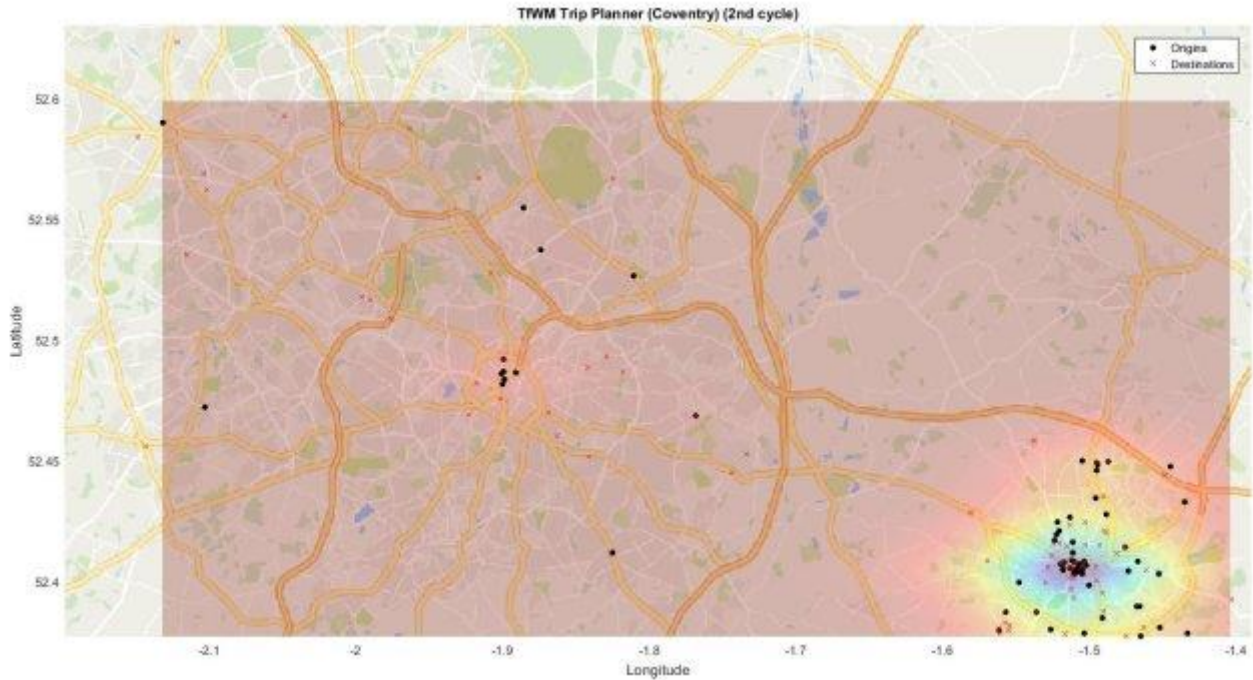
Finally, Figure 7 presents the total user installs by country, where it is shown that most of the users downloading the TfWM Trip Planner application had registered their smartphone devices in the United Kingdom, an expected result as the dissemination of the application targeted users in the abovementioned area.



Figure 7: Total User Installs by country

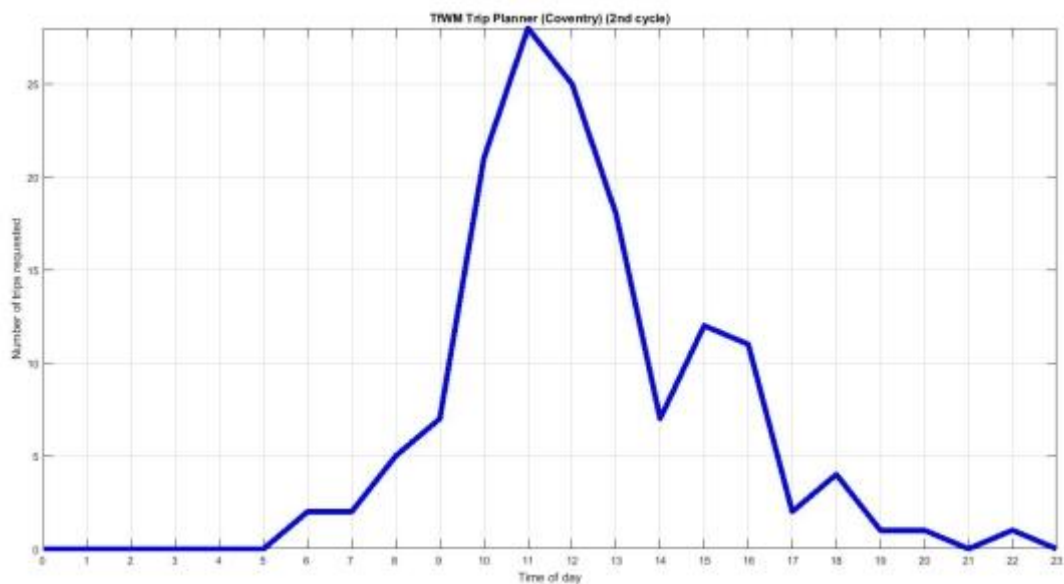
### 3.3.1.3. Logging module results

Figure 8 presents the extracted from the logging module (developed for recording user interaction with the HoPE mobile applications) popular origins and destinations the users set when using the TfWM Trip Planner application. Most of the origins and destinations are concentrated to the area of Coventry, with some also set in the area of Birmingham.



**Figure 8: Popular Origins and Destinations of TfWM Trip Planner application**

Finally, Figure 9 below reveals that most of the users started using the TfWM Trip Planner application during morning hours, probably when leaving home, until early in the evening, while the application usage dropped during night hours.



**Figure 9: Number of trips requested by time of the day**



## 4. Discussion

During the 2nd evaluation cycle the TfWM Trip Planner application went through a second internal testing process where the consortium members tested the new functionalities of the application. A few minor bugs were revealed and addressed later by the technical partners.

The TfWM application was at first disseminated to the public using the TestFairy platform and later using Google Play to ease the user access. The evaluation process of the TfWM application went through without any major issues where a unified evaluation plan provided a framework which covered the aspects of the applications.

That framework, as done in the 1st evaluation cycle, helped the involved partners to monitor the early stages of applications development, and their dissemination to be evaluated by real users. This framework also allowed the involved participants to the overall project, to closely follow the application evolution towards its final product form.

The results presented in the previous sections show promising results towards the TfWM Trip Planner application user's acceptance. Moreover, a high number of users who download the abovementioned application, kept it in their smartphone devices for later use, revealing its potential usefulness.

Nevertheless, a number of known internal issues which occurred during the 2nd cycle period, led to the delay of developing new functionalities and improving the already developed applications based on the feedback received by the users during the 1st evaluation cycle. All these events had an impact on the acquirement of more detailed feedback from users using surveys during the 2nd cycle.

## 5. Conclusion

This deliverable includes a presentation of the evaluation actions undertaken to evaluate the TfWM Trip Planner application and show the progress done for the 2nd evaluation cycle.

The evaluation results extracted via the TestFairy and Google Play platforms, used to disseminate the TfWM Trip Planner application to the public, show promising results towards the application usefulness and user acceptance, also revealing room for improvements and the need for the extraction of more detailed insights on user opinion towards the application.

During the 2nd evaluation cycle the members of the consortium put increased efforts to solve the internal issues occurred during the 2nd cycle, which resulted in the increase of the usage of the applications along with the evaluation feedback acquired directly from users during the 3rd cycle. The next edition of this deliverable (D5.3.3) will feature as an improved report of the evaluation results for the HoPE Mobile applications, including results towards the detailed user opinions on the application aspects based on completed user surveys provided by the committed participants.